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lab 5 Postlab.

Q.1] Explain the time complexity of A* algorithm.

Ans] The time complexity of A* depends on the quality of heuristic function. In a worst-case the algorithm can be O(b^d) where b is the branching factor and d is the number of nodes on the resulting path.

Q.2] What are the limitations of A* algorithm?

Ans] The limitations are:

1. Computation Cost:
It can be computationally expensive especially in scenarios of extensive search spaces.

2. Reliance on Heuristic:
A* heavily relies on the quality of the heuristic function to estimate the distance to the goal.

3. Limited Applicability:
A* may struggle with certain types of search space.
- Dynamic environment
- Uninformed seach spaces.

Q.3] Discuss A*, BFS, DFS, Dijkstra.

Ans] BFS:

BFS is an algorithm for traversing or searching tree or graph data structure It starts at the root, explores all the neighbour nodes prior to moving to nodes at next level.

(ii) DFS :

DFS is another algorithm for traversing or searching tree or graph data structure.

It starts at the root, explores as far as possible along each branch before backtracking.

(iii) Dijkstra Algorithm :

Dijkstra algorithm is used to find the shortest path from a single vertex to all other vertex.

It iteratively select the vertex with the smallest tentative distance from source vertex and updates the distances to its adjacent vertices if shorter path is found.